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# FIELDIANA • ZOOLOGY.

Published by

CHICAGO NATURAL HISTORY MUSEUM

Volume 39

FEBRUARY 24, 1961

No. 46

## A New Pelobatid Frog of the Genus *Megophrys* from Hong Kong

ROBERT F. INGER

CURATOR, DIVISION OF AMPHIBIANS AND REPTILES

AND

J. D. ROMER

C/O URBAN COUNCIL OFFICES, HONG KONG

Several papers (Annandale, 1917; Smith, 1924) have referred to a *Megophrys* collected on The Peak of Hong Kong Island. One of us (Romer) has collected adults and tadpoles of the same species on Hong Kong Island during the past decade. Though listed as *boettgeri* by previous authors, we believe this population is a distinct species.

### *Megophrys brachykolos*,<sup>1</sup> new species

*Holotype*.—Chicago Natural History Museum number 69063, an adult male collected on The Peak, Hong Kong Island, in August, 1952, by J. D. Romer.

*Paratypes*.—CNHM 64165, 69062, 69064–5, 109977–86, from The Peak, Hong Kong Island. CNHM 24408 from Kuatun, Chungang Hsien, Fukien Province, China.

Larval series CNHM 109987 (10) from Wong Nai Chung Gap, Hong Kong Island.

*Diagnosis*.—A small species of *Megophrys* having a strongly projecting snout, no vomerine teeth, a small horn-like tubercle at the edge of the upper eyelid, short legs (the heels not meeting when the flexed legs are held at right angles to the body axis), tympanum usually wider than half diameter of eye, and dorsal markings, if present, restricted to an interorbital triangle.

*Description*.—Habitus robust; head wider than long, width 0.36–0.43 of snout-vent, length 0.33–0.40; snout almost truncate in plan

<sup>1</sup> From *brachys*, meaning short, and *kolos*, meaning limb or leg.

Library of Congress Catalog Card Number: 61-11259

No. 910

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view, strongly projecting, sloping backward to mouth in profile, depth of snout just before eye subequal to interorbital width and to snout length; interorbital width equal to or greater than that of upper eyelid; upper eyelid with a small, horn-like tubercle at the center of its margin; canthus rostralis sharp; lores vertical, not concave; diameter of eye equal to or longer than snout; pupil vertical; tympanum distinct, diameter more than half diameter of eye, 0.06–0.09 of snout-vent; no vomerine teeth; margin of tongue smooth.

Tips of digits round, slightly or not dilated; first finger longer than second, fourth shorter than second; a large subarticular tubercle at base of each finger; a large palmar tubercle at base of first finger and one at base of fourth. Toes with a thick, fleshy web at their bases; fifth toe with 2–2½ phalanges free, fourth with 4, third with 3; third toe longer than fifth; subarticular tubercles of toes weak, basal ones long; a large, oval, inner metatarsal tubercle, no outer one; tibia 0.34–0.43 of snout-vent.

Skin smooth below and above or (in life) weakly granular on dorsum and posterior part of abdomen; usually fine, curved ridges on back; a thin oblique fold from eye above tympanum to axilla; pectoral gland small, round, closer to axilla than to mid-ventral line; one or two similar glands on rear of thigh.

*Color* (in alcohol).—Gray or brown above; a dark interorbital triangle with a light center, apex of triangle over occiput; back usually with obscure darker markings; side of head with dark vertical bars, usually one on lores, one below eye, and one behind eye; ventral surfaces whitish or yellowish spotted with brown or purplish gray; males with dark throats; both sexes usually have dark longitudinal streak down center of throat; sides of body with small dark spots; anal region and rear surfaces of tarsus and foot dark brown bordered above with a thin light line; dorsal surfaces of limbs with thin, dark crossbars.

In life, ventral surface pinkish near groin.

*Measurements* (mm.) of *holotype*.—Snout-vent 34.9, tibia 14.8, head width 14.2, head length to tip of snout 13.3, tympanum 2.8.

*Secondary sex characters*.—Three females containing enlarged ova measure 40.0–48.4 mm. (median 43.5), and ten adult males 34.1–39.5 mm. (median 35.4). A fourth female is 32.6 mm. long. Males have median subgular vocal sacs having small, round openings into the mouth near the commissure of the jaws. Black nuptial pads cover the middle half of the dorsal surface of the first finger and a small circular area of the dorsal surface of the second finger.



FIG. 101. Dorsal view of adult female *Megophrys brachykolos*; snout-vent 43.5 mm.

The proportions of head length, head width, and tympanum diameter to snout-vent are smaller in females than in males. Head length in four females is 0.330–0.349, in ten males 0.354–0.395; head width of females 0.354–0.365, of males 0.373–0.430; tympanum diameter of females 0.062–0.073 (median 0.068), of males 0.065–0.086 (median 0.080).

*Larvae*.—The tadpoles have typical funnel mouths and are very similar to those of *boettgeri*.

Head and body oval, slightly depressed, width almost two-thirds of length; diameter of eye greater than eye-lip distance; interorbital equals internarial space, more than twice diameter of eye; mouth

TABLE 1.—Comparison of Body Proportions in Males of Five Species of *Megophrys* from Southern China and Tonkin  
(Proportions given in terms of thousandths of snout-vent)

	<i>brachykolos</i>	<i>kuatunensis</i>	<i>boettgeri</i>	<i>palpe- bralespinosa</i>	<i>minor</i> <sup>1</sup>
Tibia					
Range.....	384-434	439-472	451-466	462-478	470-490
Median.....	410	456	455	...	...
Number.....	10	10	4	2	8
Head Width					
Range.....	373-430	313-352	295-333	335-356	300-310
Median.....	391	325	309	...	...
Number.....	10	10	4	2	8
Head Length					
Range.....	354-395	326-362	317-344	356-365	320-330
Median.....	373	342	328	...	...
Number.....	10	10	4	2	8
Tympanum Diameter					
Range.....	65-86	47-56	49-52	54-65	...
Median.....	80	53	51	...	...
Number.....	10	9	4	2	...

<sup>1</sup> Data from Liu (1950).

terminal; lips forming funnel; when expanded, lips as wide as body; spiracle ventrolateral, closer to eye than to end of body; vent median; tail strong, margins subparallel, tapering to a point; fins subequal in depth, both about one-third depth of caudal muscle at center of tail.

Color (in alcohol) dark brown above and below; ventral fin lighter than dorsal, colorless in proximal third in a pre-limb bud larva.

Total length of larva in pre-limb bud stage 22 mm., head-and-body 7.1 mm.; total lengths of 7 larvae in hind limb stages XI-XIV (Taylor and Kollros, 1946) 36-41 mm., head-and-body 10.3-12.6 mm.; total lengths of 2 larvae with erupted fore limbs 40-41 mm., snout-vent 12.3-12.5 mm.

*Ecological notes.*—All Hong Kong specimens, including those mentioned by Annandale (1917) and Smith (1924), have been collected on The Peak. Those caught by Romer were found at elevations between 300 and 400 meters.

Males emit a series of short notes repeated in quick succession from hidden positions in holes or under rocks.

Larvae were collected in small streams at Ho Chung in the New Territories (mainland) of Hong Kong on January 2, 1949 (now in

British Museum), and at Wong Nai Chung Gap on Hong Kong Island on May 1, 1949, and January 29, 1955. Well-developed tadpoles were seen on The Peak on April 21, 1956. Those caught in January, 1955, were in pools of an intermittent stream.

*Comparisons.*—Four small species of *Megophrys* having strongly projecting snouts but no vomerine teeth have been reported from eastern and southern Asia. *Megophrys brachykolos* differs from all of them in having shorter legs and a wider head (Table 1). The differences in body proportions are obvious when a specimen of *brachykolos* is placed beside one of any of the other species.

One of the four previously known species, *M. minor* Stejneger (type locality Kwanhsien, Szechwan), also differs from *brachykolos* in having no webbing at all between the toes (leaving three phalanges of the fifth toe free of web).

*Megophrys boettgeri* (Boulenger) (type locality Kuatun, Fukien), the second of the small species, has no "horn-like" tubercle on the edge of the upper eyelid such as occurs in *brachykolos*. A conspicuous, large black mark covers most of the dorsum in *boettgeri*; the back of *brachykolos* is without a pattern or has obscure mottling.

*Megophrys kuatunensis* Pope (type locality Kuatun, Chungan Hsien, Fukien), the third of the small species, has less extensive webbing (fifth toe with three phalanges free in *kuatunensis*, usually two or at most  $2\frac{1}{2}$  free in *brachykolos*). The femoral gland is larger in *kuatunensis* than in *brachykolos*.

The last of these small species, *palpebralespinosa* Bourret (type locality Chapa, Tonkin), has four to six large, erect papillae on the upper eyelid. Each of them is larger than the small tubercular structure at the edge of the eyelid of *brachykolos*, and they are not confined to the margin of the lid. The web of *brachykolos*, though as extensive as that of *palpebralespinosa*, is fleshy rather than thin as in the Tonkin frog. The coloration of the three paratypes of *palpebralespinosa* that were seen (Museum National d'Histoire Naturelle 48.114-6) has become too obscured in preservative for comparative purposes. Bourret's description (Bourret, 1941) mentions a dark diamond-shaped mark on the posterior part of the back but says nothing about an interorbital or occipital spot.

The specimens of *kuatunensis* and *boettgeri* used for Table 1 are from Chungan Hsien, Fukien Province, the district including the type localities of both species. A female (CNHM 24408) from the latter locality and originally one of the paratypes of *kuatunensis* agrees with topotypic female *brachykolos* in each body proportion:

tibia 0.389, *brachykolos* 0.340–0.406; head width 0.355, *brachykolos* 0.354–0.365; head length 0.346, *brachykolos* 0.330–0.349; tympanum 0.067, *brachykolos* 0.062–0.073. As this specimen also has the tubercle at the edge of the upper eyelid and only  $2\frac{1}{2}$  phalanges of the fifth toe free as in *brachykolos*, it has been assigned to that species. Thus *brachykolos* is sympatric with *boettgeri* and *kuatunensis*. It must, as a consequence, be regarded as a full species.

We are indebted to Dr. J. Guibé, Museum National d'Histoire Naturelle, Paris, and Mr. C. M. Bogert, American Museum of Natural History, for the use of specimens in their institutions. We are also grateful to Mr. Clifford H. Pope, Winnetka, Illinois, for his suggestions and critical reading of the manuscript.

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